

REMARKS

By this Amendment, claims 34-37 are amended and 38-47 added. Accordingly, claims 34-47 are pending in this application. The amendment to claims 34-37 are to comport with common U.S. practice and does not change the scope of claims 34-37. Thus, the amendment to claims 34-37 are non-narrowing. No new matter is added.

Claims 34 and 36 are rejected under 35 U.S.C. §103(a) over Fogle Jr. et al. (Fogle), U.S. Patent No. 6,305,286 in view of Campbell, U.S. Patent No. 5,044,278 or Takegawa et al., (Takegawa), JP A 9-126697. The rejection is respectfully traversed.

This rejection is improper because 1) Campbell is not analogous prior art; and 2) the Office Action has failed to establish a prima facie case of obviousness under 35 U.S.C. §103(a).

1) Campbell is not analogous art as defined by MPEP § 2141.01(a).

To rely on a reference for a rejection under 35 U.S.C. §103(a), the reference must be analogous prior art (MPEP §2141.01(a)). To qualify as analogous prior art, "the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1446 (Fed. Cir. 1992). *See also, In re Deminski*, 796 F.2d 436 (Fed. Cir. 1986); *In re Clay*, 966 F.2d 656, 659 (Fed. Cir. 1992).

As clearly stated on page 1, lines 5-8, of Applicants' specification, and evident from the pending claims, the field of endeavor of the present application relates to initiator for an airbag apparatus or a seatbelt pre-tensioner, either of which is to be furnished in a vehicle.

The field of endeavor of Campbell relates to ammunition and to an electrically ignitable cartridge system (col. 1, lines 5-9). Accordingly, Campbell is not within the same field of endeavor as the present application and the invention recited in the pending claims.

Furthermore, Campbell is not "reasonably pertinent to the particular problem with which the inventor was concerned." When determining whether a reference is reasonably pertinent to the particular problem with which the inventor was concerned, "the similarities and differences in structure and function" carry great weight. MPEP §2141.01(a), *In re Ellis*, 467 F.2d 1370, 1372 (CCPA 1973); see also *In re Clay*, 966 F.2d 656 (Fed. Cir. 1992). Campbell is neither similar in structure nor similar in function to Applicants' invention recited in the pending claims.

With respect to structure, Campbell only discloses an electrically ignitable cartridge system, including a nonmetallic cartridge case, of a safe, hardy and effective construction, which is the substantial equivalent of a convention brass-cased cartridge (col. 1, lines 44-48). Specifically, to ignite the charge of propellant to project the bullet 34 from the plastic cartridge 20 (col. 4, lines 29-49; Fig. 1), Campbell uses a spark gap G, which is defined between inner ends of the central electrode 70 and the annular electrode 3-44 (col. 9, lines 45-64; Figs. 8-9). Applicants' disclosure describes an initiator that includes a cup-shaped casing airtightly fixed, at an open end portion, to an outer circumference of the conductive header and accommodating, in a sealed condition, and the bridge wire and an explosive which detonates in response to heat generation of the bridge wire. Because Campbell uses a hammer of a firearm to strike the central electrode 70 in order to create a spark (see Fig. 8, i.e., spark gap G) to ignite the gun powder contained in the plastic casing, Campbell does not need to use a bridge wire to generate heat. Thus, the nonmetallic cartridge case of Campbell is not structurally similar to Applicants' initiator.

As discussed above, the function of Campbell's non-metallic cartridge case is to replace the brass cased or cartridge that contains a charge of powder, a primer, and a bullet or projectile therein (col. 4, lines 40-49). The function of Applicants' initiator is to preventing the removal of a component from an adjacent component and suppressing damage to the

initiator (page 3, lines 11-16 of Application). Thus, Campbell's non-metallic cartridge case is not functionally similar to Applicants' initiator.

Because Campbell is neither similar in structure nor similar in function to Applicant's initiator as recited in the pending claims, Campbell cannot reasonably be considered to be reasonably pertinent to the particular problem with which the inventor was concerned. Thus, in accordance with MPEP §2141.01(a), Campbell cannot be considered analogous art.

Therefore, the rejection is improper and should be withdrawn.

2) The Office Action has failed to establish a prima facie case of obviousness under 35 U.S.C. §103(a).

To establish a prima facie case of obviousness, three criteria must be met (MPEP §§ 2142, 2143). 1) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to the skilled artisan, to modify the reference or combine reference teachings. 2) There must be a reasonable expectation of success. 3) The prior art reference (or references when combined) must teach or suggest all of the claim limitations. The first two criteria must both be found in the prior art, and not based on Applicant's disclosure.

Applicants respectfully submit that the Office Action fails to satisfy at least the first and third criteria. Applicants will address the third and then the first criteria below. As the Office Action recognizes, Fogle fails to disclose “a taper between the conductive header and the insulator.” However, contrary to the Office Action's assertion, Campbell fails to make up for this deficiency of Fogle.

Campbell describes a cartridge that has a case of an electrically non-conductive material so that the conventional brass-cased cartridge or shell used to fire a bullet can be replaced with a synthetic polymer cartridge case (col. 1, lines 10-18 and 44-61). To ignite the charge of propellant to project the bullet 34 from the plastic cartridge 20 (col. 4, lines 29-

49; Fig. 1), Campbell uses a spark gap G, which is defined between inner ends of the central electrode 70 and the annular electrode 3-44 (col. 9, lines 45-64; Figs. 8-9). Thus, Campbell's electrically non-conductive plastic bullet casing uses a hammer of a firearm to strike the central electrode 70 in order to create a spark (see Fig. 8, i.e., spark gap G) to ignite the gun powder contained in the plastic casing.

Accordingly, as discussed above, Campbell's electrically ignition cartridge system is directed to a cartridge that has a case of an electrically non-conductive material (col. 1, lines 44-61). Specifically, as shown in Figs. 8-9, the header 3-28 is a non-conductive material (i.e., synthetic resin polymer, such as Teflon (col. 4, lines 40-45)). Thus, the header 3-28 cannot reasonably be considered conductive. As a result Campbell fails to disclose "a taper between the conductive header and the insulator" as recited in claim 34.

Further, a throughbore in the non-conductive header 3-28 includes an annular electrode 3-44 that is inserted into the throughbore. The annular electrode 3-44 has a frustoconical section 3-44, which conforms to the throughbore of head section 3-28. But, the insulator 3-50 is positioned between the annular electrode 3-44 and the central electrode 2-70 and is not joined to the insulator of the non-conductive header 3-28.

Thus, Campbell fails to disclose or suggest that the hole of the conductive header and the insulating member fitted into the hole have respective taper portions in a region where the insulating member is joined to the conductive header, the taper portions having diameters decreasing with increasing distance from the explosive, as recited in claim 34.

Further, in addition to failing to disclose a conductive header, combining Campbell with Fogle would change the principle operation of Fogle. As MPEP §2143.01 VI states, "if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious." *In re Ratti*, 270 F.2d 810, 123

USPQ349 (CCPA 1959). The teachings of the alleged references are not sufficient to render the claims *prima facie* obvious because the alleged combination of Fogle and Campbell would require a substantial reconstruction and redesign of the initiator of Fogle as well as a change in the basic principles under which the initiator of Fogle construction was designed to operate. Fogle's initiator uses a dome-shaped ignition droplet (Fig. 1 of Fogle) that contains the heating element (bridge wire 44 of Fogle) to ignite the pyrotechnic charge 48 (Figs. 1-3 of Fogle). But, the non-conductive header 3-28 of Campbell uses a hammer 22 to strike the electrode 70 in order to create a spark to ignite the gunpowder (col. 9, lines 27-35).

Thus, the suggested combination of references would require a substantial reconstruction and redesign of the elements shown in Fogle as well as a change in the basic principles under which the Fogle reference construction was designed to operate. Accordingly, the alleged teachings of the references are not sufficient to render the claims 34-37 *prima facie* obvious.

Takegawa also fails to make up for the deficiencies of Fogle. With respect to Takegawa, the insulating plug 1 is made of an epoxy resin and glass that encapsulates the lead pins 2, which include a circular flange 21 (Fig. 3; paragraphs [0008 - 0010]). The lead pins 2a, 2b of Takegawa are flattened at the tip to form a flange 21 in order to weld the bridge wire 44 thereon (paragraph [0008]). As clearly shown in Fig. 3, the bridge wire 40 is welded to the end of the flange 21 of the lead pins 2. Accordingly, the flanges 21 are part of lead pins 2a, 2b and are fitted into the taper holes 31 of plug 1 so that the bridgeline 4 can be connected to the surface of the flange 21 (Fig. 3-4; Abstract). Thus, the pins 2a, 2b are not fitted into a hole where the insulating plug is fitted.

Further, as shown in Fig. 5 of Takegawa, the detonator using the plug 1 is fixed to the metal end plate 61 by sealing compounds 62, such as glass and an epoxy resin (paragraph [0013]). Accordingly, the edge of the plug 1 is sealed or fixed to the metal end

plate 61 by the sealing compounds 62 (Fig. 6). But, the insulating plug 1 is not fitted into a hole where the conductive header is fitted into because the lead pins 2a, 2b are fitted inside the insulating plug 1. Further, the insulating plug 1 does not have taper portions having diameters decreasing with increasing distance from the explosive (Fig. 6).

Thus, Takegawa fails to disclose or suggest that the hole of the conductive header and the insulating member fitted into the hole have respective taper portions in a region where the insulating member is joined to the conductive header, the taper portions having diameters decreasing with increasing distance from the explosive, as recited in claim 34.

Because none of the applied references or the alleged combination thereof disclose, teach or suggest all the features recited in claim 34, the applied references cannot possibly render obvious claim 36 and likewise, new claims 38-47, which depend from claim 34, at least for the reasons discussed with respect to claim 34, as well as for the additional features recited therein. Thus, withdrawal of the rejection is respectfully requested.

Claims 34-37 are rejected under 35 U.S.C. §103(a) over Fogle in view of Stonestrom, U.S. Patent No. 2,921,520. The rejection is respectfully traversed.

This rejection is improper because 1) Stonestrom is not analogous prior art; and 2) the Office Action has failed to establish a prima facie case of obviousness under 35 U.S.C. §103(a).

1) Stonestrom is not analogous art as defined by MPEP § 2141.01(a).

To rely on a reference for a rejection under 35 U.S.C. §103(a), the reference must be analogous prior art (MPEP §2141.01(a)). To qualify as analogous prior art, "the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1446 (Fed. Cir. 1992). *See also, In re Deminski*, 796 F.2d 436 (Fed. Cir. 1986); *In re Clay*, 966 F.2d 656, 659 (Fed. Cir. 1992).

As clearly stated on page 1, lines 5-6, of Applicants' specification, and evident from the pending claims, the field of endeavor of the present application relates to initiator for an airbag apparatus or a seatbelt pre-tensioner, either of which is to be furnished in a vehicle.

The field of endeavor of Stonestrom relates to plugs for detonators of the type employed to detonate military explosives (col. 1, lines 14-35). Accordingly, Stonestrom is not within the same field of endeavor as the present application and the invention recited in the pending claims.

Furthermore, Stonestrom is not "reasonably pertinent to the particular problem with which the inventor was concerned." When determining whether a reference is reasonably pertinent to the particular problem with which the inventor was concerned, "the similarities and differences in structure and function" carry great weight. MPEP §2141,01(a), *In re Ellis*, 467 F.2d 1370, 1372 (CCPA 1973); see also *In re Clay*, 966 F.2d 656 (Fed. Cir. 1992). Stonestrom is neither similar in structure nor similar in function to Applicants' invention recited in the pending claims.

With respect to structure, the detonator plug of Stonestrom is of the spark gap type and is fired by applying a high potential between the pin member 7 and the housing 1 causing a spark to jump between end surface 8 of the pin member and the adjacent end surface of the housing 1 (col. 3, lines 56-60). Applicants' disclosure describes an initiator that includes a cup-shaped casing airtightly fixed, at an open end portion, to an outer circumference of the conductive header and accommodating, in a sealed condition, and the bridge wire and an explosive which detonates in response to heat generation of the bridge wire. Because Stonestrom uses a pin member 7 and the housing 1 that causes a spark to jump between end surface 8 of the pin member and the adjacent end surface of the housing 1, Stonestrom does not need to use a bridge wire to generate heat. Thus, the detonator plug of Stonestrom is not structurally similar to Applicants' initiator.

As discussed above, the function of Stonestrom's detonator plug is to cause a spark to jump between the end surfaces of the pin member and housing, respectively (col. 3, lines 56-60). The function of Applicants' initiator is to preventing the removal of a component from an adjacent component and suppressing damage to the initiator (page 3, lines 11-16 of Application). Thus, Stonestrom's detonator plug is not functionally similar to Applicants' initiator.

Because Stonestrom is neither similar in structure nor similar in function to Applicants' initiator as recited in the pending claims, Stonestrom cannot reasonably be considered to be reasonably pertinent to the particular problem with which the inventor was concerned. Thus, in accordance with MPEP §2141.01(a), Stonestrom cannot be considered analogous art. Therefore, the rejection is improper and should be withdrawn.

2) The Office Action has failed to establish a prima facie case of obviousness under 35 U.S.C. §103(a).

To establish a prima facie case of obviousness, three criteria must be met (MPEP §§ 2142, 2143). 1) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to the skilled artisan, to modify the reference or combine reference teachings. 2) There must be a reasonable expectation of success. 3) The prior art reference (or references when combined) must teach or suggest all of the claim limitations. The first two criteria must both be found in the prior art, and not based on Applicants' disclosure.

Applicants' respectfully submit that the Office Action fails to satisfy at least the third criteria.

As the Office Action comments recognize, Fogle fails to disclose "a taper between the conductive header and the insulator." However, contrary to the Office Action assertion, Stonestrom fails to make up for this deficiency of Fogle.

The detonator plug of Stonestrom is used to detonate military explosives (col. 1, lines 14-35). Accordingly, the central pin member 7 is of a generally cylindrical configuration having a circular cross-sectional shape as shown in Fig. 2 (col. 2, lines 38-47). The pin 7 also projects endwise beyond the opposite face of the housing member 1 (Figs. 3-6; col. 2, line 70-col. 3, line 1). In other words, the rounded end 9 of metal pin 7 of Stonestrom extends outside the housing member 1.

An elongated cup-shaped casing member 11 of Stonestrom contains base and priming charges (not shown), a flash charge 12, and an ignition button 13 (col. 3, lines 44-47). The ignition button 13 is in underlying contact with the flat end face of the metal pin 7 of the plug assembly and the adjacent end face of the reduced portion 2 of the housing member 1, and the flash charge 12 in turn underlies the ignition button 13, and extends upwardly thereabout so that it is in surrounding contact with the lateral surface of the reduced portion 2 of the housing 1 (47-54).

Thus, the detonator plug of Stonestrom is of the spark gap type and is fired by applying a high potential between the pin member 7 and the housing 1 causing a spark to jump between end surface 8 of the pin member and the adjacent end surface of the housing 1. (col. 3, lines 56-60). Accordingly, Stonestrom's detonator plug applies a high potential between the pin member 7 and the housing 1 to ignite the flash charge 12.

Second, the detonator plug of Stonestrom does not have a hole in which the hole of the conductive header and the insulating member fitted into the hole have respective taper portions in a region where the insulating member is joined to the conductive header, the taper portion having diameters decreasing with increasing distance from the explosive, as recited in claim 34.

As clearly shown in Fig. 4 of Stonestrom, the tapered bore 3 through the housing 1 is sufficiently larger than the diameter of the cylindrical pin 7 so that the coating 5 either alone

or in combination with bonding material 10 provides an efficient dielectric insulator between the pin member 7 and housing 1 (col. 3, lines 34-40). However, the taper bore 3 tapers towards the explosive 12. Accordingly, the tapered bore 3 is not tapered to have diameters decreasing with increasing diameter from the explosive (i.e., flash charge 12).

Further, the teachings of the alleged references are not sufficient to render the claims *prima facie* obvious because the alleged combination of Fogle and Stonestrom would require a substantial reconstruction and redesign of the initiator of Fogle as well as a change in the basic principles under which the initiator of Fogle construction was designed to operate. Fogle's initiator uses a dome-shaped ignition droplet (Fig. 1 of Fogle) that contains the heating element (bridge wire 44 of Fogle) to ignite the pyrotechnic charge 48 (Figs. 1-3 of Fogle). But, the detonator plug of Stonestrom is of the spark gap type and is fired by applying a high potential between the pin member 7 and the housing 1, which causes the spark to jump between the end surfaces of the pin member 7 and the housing 1 (col. 3, lines 56-60 of Stonestrom).

Thus, the suggested combination of references would require a substantial reconstruction and redesign of the elements shown in Fogle as well as a change in the basic principles under which the Fogle reference construction was designed to operate. Accordingly, the alleged teachings of the references are not sufficient to render the claims as recited in claims 34-37 *prima facie* obvious. Accordingly, Stonestrom lacks the required suggestion or motivation under 35 U.S.C. §103 to modify the initiator of Fogle to achieve the desired features as recited in claim 34.

Because the alleged combination of Fogle and Stonestrom does not disclose or suggest all the features as recited in claim 34, the alleged combination cannot possibly render obvious the subject matter of claims 35-37 and likewise, new claims 38-47, which depend

from claim 34, for reasons discussed with respect to 34 as well as for the additional features recited therein. It is respectfully requested that the rejection be withdrawn.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 34-47 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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